What is claimed is:

1. A discharge device comprising:

a discharge chamber containing a gas at a predetermined pressure;

a flat cathode mounted within said chamber;

an anode mounted within the said chamber, said anode having an opening of a arbitrary shape;

a dielectric layer located between the cathode and the anode, said dielectric layer having substantially the same shaped opening as said anode and located at the same position; and

a means for generating a voltage and current such the device operates in the abnormal glow mode.

2. The discharge device according to claim 1 wherein a plasma layer which is limited by the size of the dielectric is generated on top of the cathode dielectric, and carries the current from the cathode surface transversely to the anode.

3. The discharge device according to claim 1 wherein the anode and the cathode are separated by a distance of less that one millimeter.

4. The discharge device according to claim 2 wherein said plasma layer is a cathode boundary layer discharge.

5. A light source comprising:

a sealed chamber containing a gas at a predetermined pressure;

a flat cathode mounted within said chamber;

an anode mounted within the said chamber, said anode having an opening of a arbitrary shape;

a dielectric layer located between the cathode and the anode, said dielectric layer having substantially the same shaped opening as said anode and located at the same position; and

a means for generating a voltage and current such the device operates in the abnormal glow mode.

6. The light source according to claim 5 wherein a plasma layer which is limited by the size of the dielectric is generated on top of the cathode dielectric, and carries the current from the cathode surface transversely to the anode.

7. The light source according to claim 5 wherein the anode and the cathode are separated by a distance of less that one millimeter.

8. The light source according to claim 6 wherein said plasma layer is a cathode boundary layer discharge.

9. A radiation source comprising:

a sealed chamber containing a gas at a predetermined pressure;

a flat cathode mounted within said chamber;

an anode mounted within the said chamber, said anode having an opening of a arbitrary shape;

a dielectric layer located between the cathode and the anode, said dielectric layer having substantially the same shaped opening as said anode and located at the same position; and

a means for generating a voltage and current such the device operates in the abnormal glow mode.

10. The light source according to claim 9 wherein a plasma layer which is limited by the size of the dielectric is generated on top of the cathode dielectric, and carries the current from the cathode surface transversely to the anode.

11. The light source according to claim 9 wherein the anode and the cathode are separated by a distance of less that one millimeter.

12. The light source according to claim 10 wherein said plasma layer is a cathode boundary layer discharge.